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Throughout the text, Miller emphasizes the agency of both humans and nature in shaping tropical landscapes. He recurrently depicts human culture as acting in opposition to the good of nature. In this dichotomy, “culture” appears as a monolithic force, rather than as the product of often conflicting attitudes and aspirations embraced by different social groups. Miller claims in his introduction to be concerned with the sustainability of civilizations in their environments, rather than with equality of access to natural resources. This is a difficult analytical stance to maintain when discussing a region notorious for social inequities. Greater emphasis on internal conflicts about natural resource use would help to complicate Miller’s analysis of the relationship between culture and nature. Indeed, in the book’s latter chapters, questions of human poverty and the need for more equitable access to healthy food and clean water rightly become integral to Miller’s examination of environmental sustainability.

EVE BUCKLEY

Olaf Pedersen. *The Two Books: Historical Notes on Some Interactions between Natural Science and Theology*. Edited by **George V. Coyne, S.J.**, and **Tadeusz Sierotowicz**. xix + 424 pp., app., bibl., index. Notre Dame, Ind.: University of Notre Dame Press, 2007. \$22 (paper).

Olaf Pedersen was a well-known Danish historian of science, a longtime professor at the University of Aarhus. When he died in December 1997, he left a manuscript of a book on the history of “the interactions between the natural sciences and theology,” basically the text of a series of lectures given at Aarhus and Cambridge in 1982 and 1988. Through his close friend George Coyne, S.J., at the Vatican Observatory, Pedersen was able to publish a much-condensed version of these lectures in 1992 in a book with the title *The Book of Nature*. A year later, Pedersen sent the complete manuscript to Coyne with the intention of having it, too, published—with revisions by Coyne—by the Vatican Observatory. However, Coyne was unable to do the revisions immediately, and therefore preliminary Danish and Polish versions of the book were published in 1996 and 1997. Now, ten years after Pedersen’s death, Coyne, with the help of Tadeusz Sierotowicz, has finally managed to publish the edited manuscript. Near the end, a paragraph on problems with evolution and an “Epilogue” have been added (taken from the Danish and Polish editions), while a lengthy

footnote on the history of the metaphor of the “Book of Nature” has been transferred from Chapter 6 to the “Preamble.” Otherwise, the editorial work has been restricted to a bare minimum. For instance, the author still refers to his book as “these lectures.”

Sad to say, the net result of all this is an outdated book that is useless as an introductory text on the relations between science and religion. The most recent literature referred to in the footnotes dates from the 1980s, and therefore seminal texts like John Hedley Brooke’s *Science and Religion* (Cambridge, 1991) and Peter Harrison’s *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge, 1998) are missing from the bibliography. More important is the fact that the treatment of the topic lacks the necessary balance. Pedersen, a specialist in ancient and medieval science, devotes more than two-thirds of *The Two Books: Historical Notes on Some Interactions between Natural Science and Theology* to science before the Scientific Revolution; at page 200 we are still discussing fourteenth-century Aristotelianism. Newton is then treated extensively, but Darwinism is only touched on, whereas twentieth-century developments, including creationism, are not mentioned at all. Finally, the book has an unmistakable Roman Catholic bias. Pedersen, a converted Catholic, discusses the Church Fathers (here introduced as St. Jerome, St. Augustine, etc.) extensively, whereas Protestant theologians like Luther, Melancthon, and Calvin are not mentioned at all. It is as if the Reformation never happened. The Galileo affair is indeed dealt with, and Pedersen dutifully admits that the Church took hasty decisions and made irreparable mistakes. Yet he concludes somewhat submissively that we still need “a serious and thorough examination of all the evidence” (p. 227). At this point he refers to the decision of Pope John Paul II in 1979 to start such an investigation; the editors note in a footnote that the report of this commission has since been published, but it would have been more helpful to refer to the extensive literature devoted to the Galileo affair that has appeared since the pope’s decision.

Still, it would be unwise to put this book aside too quickly. As a specialist in ancient and medieval science with an impressive knowledge of Christian theology, Pedersen has interesting things to say about the way in which theology intersected with science and the other way around. The chapters on science and theology in the first centuries of the Christian Church are certainly among the best in his book. Furthermore, we should bear in mind that the author is

not focusing on science and religion in general, but only on science and theology. Although in the first chapters he seems to develop a thesis on science and belief in general, the more he approaches the modern period the more it becomes clear that he is interested only in those moments in history in which articulated theological doctrines influenced science or in which science forced theologians to rethink their dogmas. This explains why Pedersen hardly discusses what happened after Darwin. As he sees it, science and theology had been fully separated by then, each restricting itself to its own territory: the natural world for science, morals for theology. Pedersen is not quite sure whether this separation of spheres will endure forever, but for now this is where we stand. It is a point of view that can be argued, even if one does not refer to the most recent scholarly literature on Galileo or Descartes (another scientist whose ideas are not really explored).

The book therefore has its merits, but we must deplore Coyne's decision to restrict the editing to a minimum. It looks as though this publication is intended more as a tribute to a dear friend than as a contribution to the history of science. The inclusion of an appendix detailing "The Complete Works of Olaf Pedersen" reinforces this impression.

KLAAS VAN BERKEL

Jutta Schickore. *The Microscope and the Eye: A History of Reflections, 1740–1870.* ix + 320 pp., illus., index. Chicago/London: University of Chicago Press, 2007. \$40 (cloth).

As promised in its subtle title, this book delivers a "history of microscopy from the perspective of the microscopists' second-order reflections and practices" (p. 240). "Second-order reflections" is taken to include almost everything microscopists wrote about the use of the instrument beyond direct observational reports: discussions of magnifications and illumination, the dangers of theoretical bias, useful reagents for staining and fixation, means of comparing rival instruments, the optical and physiological limits of resolving power, and, most of all, their assessments of the promise and the pitfalls of the microscope's use in science. Jutta Schickore offers this exploration into second-order discourse in service to Larry Laudan's call for a closer integration of the history of scientific practices with the philosophical history of scientific methodologies.

The Microscope and the Eye unfolds chronologically, examining the second-order discourse occasioned by a sequence of selected texts and

episodes in the history of microscopy. It opens with the methodological and epistemological discussions contained in illustrated microscopy books published in the 1740s, then moves on to the conflicting observations and interpretations made by Alexander Monro (*secundus*) and Felix Fontana on the structure and appearance of nerve fibers. Another chapter examines the introduction by British instrument-makers of low-power microscopes to assist in reading the dials of precision instruments. At Chapter 6, the focus switches abruptly from England and Scotland to Germany, introducing the early work of Johannes Müller and his observations about the proper role of the microscope in knowledge making. After chapters devoted to Fraunhofer, the Weber brothers, and A. W. Volkmann, the book culminates with German efforts in the 1850s to probe the confusing structure of the retina. Here the key work was Heinrich Müller's discovery of the radial fibers and his proof through the method of entopic shadows that the rods and cones are the light-sensitive elements.

The author concludes that the extensive second-order discourse associated with these episodes proves that "the validity of knowledge crucially depended on reflexive methodological critique and practical appraisal of the means of research" (p. 218). Readers who find that thesis unsurprising will be more intrigued by two criticisms offered of the existing historiography. First, Schickore criticizes the claim, which she attributes to Marian Fournier and Catherine Wilson, that eighteenth-century microscopy experienced a stagnation and decline as a result of an alleged growing skepticism about the instrument's reliability and importance. Even episodes in which optical illusions attributable to imperfections of the microscope led to significant observational mistakes, Schickore shows, produced no general skepticism about the microscope among commentators; instead, they were taken as "an occasion for increased methodological awareness" (p. 66). Second, she questions the interpretation, allegedly offered by Edward Ruestow, that the modern history of microscopy begins only in the 1830s and 1840s, when technical improvements to the instrument, combined with "social and instrumental structures for microscopy," first launched extensive, critical, and self-reflexive use of the instrument as a research tool.

Schickore also attempts to characterize the changes in second-order discourse about microscopy between the 1740s and the 1850s. At the risk of oversimplifying her highly nuanced discussions, the main findings can be said to reinforce Jonathan Crary's semipopular histori-